



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|---|-------------|----------------------|----------------------|------------------|
| 10/665,339  | 09/19/2003  | Leonid B. Glebov     | UCF-397CIP           | 7045             |
| 23717   | 7590        | 02/27/2006           | EXAMINER             |                  |
| LAW OFFICES OF BRIAN S STEINBERGER<br>101 BREVARD AVENUE<br>COCOA, FL 32922 |             |                      | ANGEBRANDT, MARTIN J |                  |
|   |             |                      | ART UNIT             | PAPER NUMBER     |
|   |             |                      | 1756                 |                  |

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/665,339

Applicant(s)

GLEBOV ET AL.

Examiner

Martin J. Angebrannt

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12/19/03 & 9/19/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/19/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1756

1. The applicant should not merely photocopy the PTO-892 or an old PTO-1449 and submit it in lieu of a proper PTO-1449, which has not been previously initialed.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1,13 and 23, the step of exposure with ionizing radiation should include a recitation of the formation of color centers, the step of visible light exposure should also include a recitation of the bleaching of the centers and a holographic pattern of the visible light and the restoring step should likely indicate a cooling process. (please review the specification for congruency).

In claims 15-22, this is an apparatus, not an optical element.

In claim 25, what is a mux/demux device ?

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Art Unit: 1756

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13 and 15-20 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Gaissinsky et al. '509.

See example 4, which makes a trademark by exposing a glass blank to 530 nm NdYAG followed by heating, followed by simultaneously 532 and 351 nm exposure, heating and cooling. [0114-0115].

An image is an optical article.

7. Claims 1-5, 10-13, 15-21 and 23-24 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only).

The abstract describes the exposure of a color center forming glass to gamma or UV radiation to form color centers, followed by the decolorization using 632.8 nm interferometric exposure to form a hologram followed by heating.

8. Claims 15-20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Araujo et al. '404.

Araujo et al. '404 teaches the heating of the glasses to 450-650 degrees C is disclosed in table I and the use of mercury arc lamps as the light darkening source and various lasers including krypton ion lasers operating at 480, 531 and 570 nm as the bleaching light source is taught in table II. The darkening of the glass is disclosed as causing color center formation

Art Unit: 1756

(9/56-10/16). The treatment of the bistable photochromic glass to make the images stable is disclosed. (16/61-17/11).

An image is an optical article.

9. Claims 1-10-12,13,15-21 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. '404, in view of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18<sup>th</sup> Int. Congr. Glass pp. 1151-1156 (1998).

Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18<sup>th</sup> Int. Congr. Glass pp. 1151-1156 (1998) describes a glass is described composed of sodium, zinc, aluminum, and silicon oxides doped with cerium, silver, fluorine and bromine which is prepared in the manner described in the experimental section. Figure 4 evidences diffraction efficiency of approximately 95% for a PTR glass which has been exposed at approximately  $0.5 \text{ J/cm}^2$  ( $500 \text{ mJ/cm}^2$ ) Figure 5 evidences increased refractive index modulation as a function of the duration of heating for an exposure of  $64 \text{ mJ/cm}^2$  with heating at 520 degrees for up to 200 minutes. The examiner notes that figure 5 evidences a 275% increase in refractive index modulation at 200 minutes, compared with 50 minutes. The examiner notes that the first data point of figure 4 seems to correspond to the second data point of figure 5 and that one expects that the diffraction efficiency of the  $64 \text{ mJ/cm}^2$  exposure with a heating of 200 minutes at 520 degrees C would have a high diffraction efficiency similar to that achieved by the higher exposures with heating for a shorter duration. The use of exposures in the range of  $50 \text{ mJ/cm}^2$  to  $5 \text{ J/cm}^2$  is disclosed on the second page. The use of DTA analysis of all the samples and the annealing of the variously

Art Unit: 1756

processed samples is disclosed on the second page. Note that the disadvantages of references 1 and 2 apply only to the processing of the materials.(first page)

It would have been obvious to one skilled in the art to modify the Araujo et al. '404 by using the disclosed lasers to form a bleached holographic pattern in the color centers based upon the teachings of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only) and further to stabilize the resulting holographic images through the thermal treatment as taught by Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18<sup>th</sup> Int. Congr. Glass pp. 1151-1156 (1998), who also teaches that holograms in PTR materials such as those of Araujo et al. '404 are desirable.

10. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Araujo et al. '404, in view of Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only) and Glebov et al. "Photoinduced processes in photothermorefractive glasses", Proc. 18<sup>th</sup> Int. Congr. Glass pp. 1151-1156 (1998), further in view of IBM Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988).

IBM Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988) teaches the use of angularly multiplexed holograms (those with two or more holograms stored therein at different angles), where the angular selectivity is such that tilting the hologram result in the light being diffracted in a different direction (see figures 2a and 2b)

In addition to the basis provided above, the examiner holds that it would have been obvious to one skilled in the art to modify the teachings of Araujo et al. '404 combined with Bukharev et al., "Recording of holograms on radiation color centers in glass", Pis'ma v Zhurnal

Art Unit: 1756

Tekhnicheskoi Fiziki Vol. 1(21) pp. 975-7 (1975)(Abstract only) and Glebov et al.

“Photoinduced processes in photothermorefractive glasses”, Proc. 18<sup>th</sup> Int. Congr. Glass pp.

1151-1156 (1998) to form any holograms known to be useful, including those disclosed by IBM

Tech. Discl. Bull., Vol 31(3) pp. 18-21 (08/1988) with a reasonable expectation of success.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Seward, "Thermally darkenable photochromic glasses", J. Appl. Phys., Vol. 46(2) pp. 689-694 (1975), Araujo '765 (6/1-12), Pierson et al. '318 (throughout), Gaissinsky et al. '626, Araujo et al. '405 and Yokota, "Color centers in alkali silicate glasses cotnaing alkaline earth ions", Vol. 101(2) pp. 522-525 (1956), Anikin et al., J. Noncryst. Sol., Vol. 34(3) pp. 393-403 (abstract only) , Bukharaev, et al., Physica Status Solidi A: Appl. Research Vol. 50(2) pp. 711-716 (1978)(abstract only), Willaims, "Permanent photowritten optical gratings in irradiated silicate glasses", Opt. Let., Vol. 17(7) pp. 532-534 (1992) and Glebov et al., Doklady Akademii Nauk SSSR vol. 312(4) pp. 852-854 (1990)(abstract only) all concern either PTR glasses and/or gratings formed in color center materials.

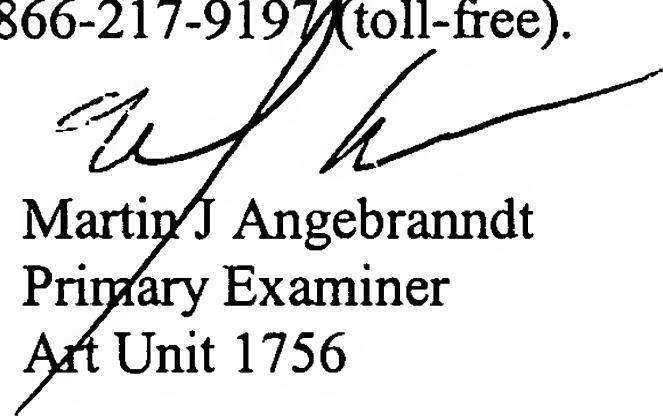
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378.

The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1756

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J Angebranndt  
Primary Examiner  
Art Unit 1756

02/17/2006